

CLIMATOLOGICAL DATA FOR APRIL, 1912.

DISTRICT No. 4, THE LAKE REGION.

HENRY J. COX, District Editor.

GENERAL SUMMARY.

The weather during the month of April, 1912, was in decided contrast with that of the three preceding months, the temperature averaging near or slightly above the normal in practically all sections of the district, except in Vermont and eastern New York; while the temperature during the months of January, February, and March averaged, respectively, 12.6° , 3.5° , and 6.2° below the normal, and in the Lake region constituted one of the coldest three-month periods on record. At the beginning of April the season was unusually backward over the whole district, and as the weather conditions during the month were marked by no decided abnormal features, both as regards temperature and precipitation, vegetation advanced very slowly, the leaves not appearing on trees and shrubbery until near the close. Outdoor work and farming operations were correspondingly retarded. Reports from Ohio indicate that the severe weather of last winter did much damage to crops in that State, wheat and clover being badly damaged. The peach buds in the fruit belt along the south shore of Lake Erie were practically all killed, except on the islands near the shore.

Seven distinct and well-defined areas of low pressure crossed the district or portions of it during the month, giving generally ample and well-distributed precipitation, largely in the form of rain, although during the storm of the 1st-3d, heavy snows were reported from the lower Lake region and the eastern portion of the district. Snow and sleet were general over the southwestern and central Lake region during the storm of the 17th-18th, and considerable snow fell in the western Lake Superior region accompanying the eastward movement of a moderate depression across the Lakes on the 21st-22d.

Severe thunderstorms accompanied locally by high winds and hail occurred in connection with the low-pressure areas of the 6th-7th, 14th-15th, and the 25th-26th, and a storm of tornadic type was reported from northern Illinois on the 6th. The percentage of possible sunshine over the district was generally in excess of the normal as was also the wind movement.

The following table shows mean values of the more important weather conditions of the month:

Portions of States lying within District No. 4.	Mean.				Greatest 24-hour precipitation.	Mean snowfall, inches.	Number of days.			
	Temperature.	Departure from normal.	Precipitation.	Departure from normal.			Precipitation.	Clear.	Partly cloudy.	Cloudy.
Minnesota.....	40.3	+ 1.0	1.87	-0.19	1.44	2.3	6	14	9	7
Wisconsin.....	44.1	+ 1.8	1.63	-0.89	1.20	1.1	7	14	9	7
Illinois.....	48.8	+ 2.9	2.55	-0.33	1.05	0.1	9	14	7	9
Indiana.....	48.9	+ 1.5	3.02	-0.45	1.78	0.6	10	14	6	10
Upper Michigan.....	38.3	+ 0.3	2.18	+0.08	1.52	2.7	9	13	8	9
Lower Michigan.....	44.8	+ 0.9	2.18	-0.15	1.61	1.0	8	12	9	9
Ohio.....	49.6	+ 1.8	3.72	+0.90	1.70	3.7	11	12	7	11
Pennsylvania.....	45.5	+ 0.8	4.22	+1.82	0.99	6.1	13	7	13	10
New York.....	42.0	- 0.7	3.22	+0.57	1.75	8.8	13	10	9	11
Vermont.....	41.1	- 1.1	2.94	+1.01	1.27	8.4	13	10	9	11

TEMPERATURE.

In general only slight departures from the normal monthly temperature were experienced in any section of the district, and the extremes of temperature were well within the limits of former years. The greatest average monthly departures were those above the normal and occurred along the western shore of Lake Michigan, Milwaukee, Wis., reporting an average daily excess of temperature of 4.0° . The greatest monthly deficiencies occurred over northern New York, Lowville reporting a departure of -4.2° . Although the average temperature for the month was in most cases close to the normal, the changes were frequent, and the month was marked by alternating periods of warm and cold weather. The first three days of the month were cold, except over the extreme western Lake Superior region, and during this period the lowest temperatures of the month generally occurred. At North Lake, N. Y., a reading of -8° was reported on the 4th. From the 5th to the 16th, temperatures were generally above the normal, except from the 8th to the 11th over eastern sections, the warmest days being the 5th, 6th, and the 15th, when departures of from $+20^{\circ}$ to $+30^{\circ}$ occurred over all portions of the district. Maximum temperatures exceeded 80° over the more southern portions of the district during this period. Temperatures below the normal occurred from the 17th to the 20th, and this period was followed by several days of seasonable weather, culminating on the 26th with readings considerably above the normal, which was in turn followed by a marked change to much cooler weather, continuing until after the close of the month. During the latter half of the month freezing temperatures were recorded at different times over practically the whole district, but no material damage was done, however, as vegetation was not sufficiently advanced to admit of injury.

PRECIPITATION.

The precipitation for the month followed closely the temperature conditions in that the departures from the normal were small. Over the greater portion of the district the monthly amounts were slightly below the normal, and in southern and central Wisconsin the deficiencies amounted in some instances to over 1.50 inches. The greatest excesses occurred in portions of Ohio, Pennsylvania, and in western Vermont. In Ohio there was a wide difference in the monthly amounts at the several stations, and in general they were below the normal in the Maumee Valley and considerably above in the middle and eastern counties. In New York the heaviest precipitation occurred near Lake Erie, and in the central lake region, with a maximum of 5.02 inches at Skaneateles. Heavy rains occurred on the 28th-29th over the central and southern portions of the district, and in Indiana on the 29th 24-hour amounts ranging from 1 to 2 inches were recorded at most stations, except those in the northeastern counties.

Snow.—The total monthly snowfall was below the normal in both the Michigan Peninsulas, in Wisconsin, Illinois, and Indiana. Over the western Lake Superior region the monthly amounts were slightly in excess of the normal, while in New York State the snowfall was comparatively light near Lakes Erie and Ontario, but unusually heavy elsewhere, the average, 8.8 inches, being the heaviest since 1904. Along Lake Champlain the snowfall exceeded 12 inches, while in central New York the fall was the heaviest for April in the past 16 years. Most of this snow fell during the storm of the 2d-3d, Harkness, Dannemora, Angelica, and Raquette Lake reporting 12, 11, 10, and 10 inches, respectively. A heavy snowstorm also occurred over the Adirondacks on the 8th-9th. Other unusually heavy snowfalls for the season occurred as follows: 6.7 inches at Cleveland, Ohio, on the 2d, which is the heaviest 24-hour April snowfall on record; 6.5 inches at Milwaukee, Wis., on the 17th-18th; and 6.4 inches at Duluth, Minn., on the 21st. However, in all these cases, the snow melted rapidly, and it had practically disappeared by the evening of the following day. At the end of the month traces of snow were reported on the ground in the wooded sections near Duluth, Minn., but in nearly all other portions of the district the winter's accumulation had, as a rule, disappeared by the end of the first decade.

SEVERE STORMS AND HIGH WINDS.

The low pressure area of the 6th-7th caused high winds generally over the Great Lake region, and nearly all stations reported maximum wind velocities of 40 miles or over. Niles Center and Wilmette, Ill., suburban towns just north of Chicago, were visited by a destructive wind storm on the 6th which caused reported damage to the extent of \$50,000 and injured 18 people. Severe thunderstorms occurred in Ohio on the afternoon and evening of the 14th, in connection with a slow-moving area of low pressure which was then central over southern Minnesota. While but little damage was done by lightning, there was considerable loss occasioned by hail which fell during the progress of the storm, and at a number of widely scattered stations hailstones were reported to have been unusually large. Near Findlay, some of the largest were said to have measured 1½ inches in diameter, while at Fremont some were found measuring 2½ inches. The greatest damage was done to windows and greenhouses. The only other severe disturbance of the month was that occurring on the 25th-26th, when the following high maximum wind velocities were reported: Duluth, Minn., 70 miles, breaking all previous April records, but doing only minor damage in the city; Cleveland, Ohio, 58 miles; Toledo, Ohio, 57 miles; Green Bay, Wis., 55 miles; Chicago, Ill., 51 miles; Detroit and Sault Ste. Marie, Mich., and Syracuse, N. Y., 50 miles.

NAVIGATION AND ICE CONDITIONS.

At the beginning of the month more ice was reported in all the lakes and the fields were more extensive in comparison than at the same time last year, and the outlook for an early opening of navigation was unfavorable. At Duluth, Minn., the harbor ice averaged 36 inches in thickness, and in the lake the fields extended solid about 20 miles out and averaged in thickness about 28 inches. However, under the influence of the warm weather during the first decade of the month which was practically the

first and most pronounced warm period of the year thus far, the ice in all the lakes softened rapidly. At the extreme south end of Lake Michigan the ice began to break up on the 3d, and on the 8th no ice was reported along either the east or the west shores of the lake from the Manitou southward, except some fields off Kenosha, Wis.

Continued seasonal temperature conditions during the second decade of the month caused a practical disappearance of the ice over the western portion of Lake Superior and local navigation was opened at Duluth on the 16th, about 10 days later than usual. Over the eastern portion of the lake, however, extensive fields were still reported, but broken and moving with the wind. No ice was reported in Lake Michigan except over the extreme north portion, and in Green Bay where it was rapidly disappearing. On Lakes Huron, Erie, and Ontario the ice fields were confined to the eastern portions of the respective lakes and were rapidly breaking up.

The display of storm warnings for the season of 1912 was resumed on the Great Lakes April 25, about 10 days later than the average date, and navigation between Lakes Superior and Huron was opened on the 24th. The ice in the Straits of Mackinac offered no obstruction to navigation as early as the 14th, but the through passage of the first boat did not occur until the 17th. Between Lakes Huron and Erie navigation was possible after the middle of the month, but no decided activity was shown. As general navigation between the Upper Lakes depends entirely upon the time when the Straits of Mackinac are free from ice and the locks at Sault Ste. Marie can be opened, the following table, showing these dates for the last 20 years, will undoubtedly be of interest.

	Dates of opening of navigation at—			Dates of opening of navigation at—	
	Straits of Mackinac.	Sault Ste. Marie.		Straits of Mackinac.	Sault Ste. Marie.
1893.....	May 7	Apr. 29	1903.....	Mar. 23	Apr. 9
1894.....	Apr. 20	Apr. 17	1904.....	May 1	May 5
1895.....	Apr. 29	Apr. 23	1905.....	Apr. 18	Apr. 14
1896.....	Apr. 22	Apr. 18	1906.....	Apr. 9	Apr. 15
1897.....	Apr. 25	Apr. 21	1907.....	Apr. 4	Apr. 23
1898.....	Apr. 16	Apr. 13	1908.....	Apr. 12	Apr. 24
1899.....	Apr. 26	Apr. 29	1909.....	Apr. 15	Apr. 20
1900.....	Apr. 8	Apr. 22	1910.....	Apr. 1	Apr. 11
1901.....	Apr. 14	Apr. 27	1911.....	Apr. 12	Apr. 22
1902.....	Mar. 26	Apr. 4	1912.....	Apr. 17	Apr. 24

FLOODS AND RIVER CONDITIONS.

One of the most severe floods in recent years occurred at Barre and Montpelier, Vt., on April 7th-8th. At the beginning of the month, from 2 to 3 feet of snow was reported on the hills and mountains about 4 to 8 miles distant, and under the influence of strong, warm, southerly winds on the 5th, 6th and 7th, this snow melted rapidly and caused an overflow of the rivers, filling the streets and cellars in the lower and business sections of the two towns. The absence of ice and driftwood resulted in the saving of many bridges. The damage at Montpelier was estimated at from \$25,000 to \$30,000 and at Barre about \$10,000.

The rapid melting of snow during the latter part of March and the early part of April caused a decided rise in the rivers of the Lower Michigan Peninsula and floods occurred at many points. A complete report of the floods in the Grand and Saginaw Rivers is published in a separate article.

APRIL, 1912, LAKE LEVELS.

The following data are from the report of the United States Lake Survey office.

Lakes.	Above tide water, New York.
	Feet.
Superior.....	601.46
Michigan-Huron.....	579.44
Erie.....	572.25
Ontario.....	246.32

Lake Superior is 0.07 foot higher than last month, 0.92 foot higher than a year ago, 0.31 foot below the average stage of April for the last 10 years, 1.23 feet below the high stage of April, 1860, and 0.92 foot above the low stage of April, 1911. It will probably rise 0.3 foot during May.

Lakes Michigan and Huron are 0.17 foot higher than last month, 0.03 foot higher than a year ago, 1.00 foot below the average stage of April for the last 10 years, 3.79 feet below the high stage of April, 1886, and 0.22 foot above the low stage of April, 1896. They will probably rise 0.3 foot during May.

Lake Erie is 1.06 feet higher than last month, 0.64 foot higher than a year ago, 0.09 foot lower than the average stage of April for the last 10 years, 1.93 feet below the high stage of April, 1862, and 0.99 foot above the low stage of April, 1895. It will probably rise 0.4 foot during May.

Lake Ontario is 1.22 feet higher than last month, 0.88 foot higher than a year ago, 0.05 foot lower than the average stage of April for the last 10 years, 2.11 feet below the high stage of April, 1886, and 1.48 feet above the low stage of April, 1872. It will probably rise 0.3 foot during May.

FLOODS IN MICHIGAN, SPRING OF 1912.

By C. F. SCHNEIDER, Section Director.

The high water in the Grand River in the spring of 1912 was caused entirely by the melting and run-off of the winter's accumulation of snow and of ice formed in the snow by frozen rain. During the entire period of the melting and run-off, there was less than one-third of an inch of rain on an average throughout the watershed and the melting was caused entirely by the advance of the season.

During January, February, and the first two decades of March, the weather was very severe and the entire period was devoid of any decided thaw, such as usually occurs during January or February. The result was that at the end of the second decade of March, all of the snowfall of the winter was stored on the ground, which was frosted to a depth of several feet.

About the middle of February there seemed to be an indication that there might be a general thaw which would release some of the water held in storage and a very careful and extensive survey of the amount of snow and ice on the ground and its water content was made. Postal cards asking for the information were sent to every post office in the watershed and the returns charted, showing that there was an average of from 11 to 15 inches of snow on the ground, which would yield about 3½ inches of water if the thaw were decided enough. The weather, however, remained too cold to melt any of the snow sufficiently to allow it to run into the river or its tributaries.

On March 7 another survey of the amount of water stored on the ground was made in a similar manner, and it was found that the depth had increased somewhat over the upper stretches of the river. At this time warning was issued to the public, saying that the season had advanced so far without any run-off at all that unless a very slow thaw immediately set in, at least 15 feet of water could be expected at Grand Rapids by the close of the month or soon thereafter. Merchants, factories, and other concerns were advised to take precautionary steps to protect themselves from a water stage that would almost surely reach 15 feet.

The mean temperature rose above freezing on the 17th for a few days, but fell below that point on the 20th and continued so until the 26th. The day temperatures, however, softened the snow so that on the 26th of March, when the mean temperature rose above the freezing point permanently, the congestion of water began in earnest.

The first flood warning was issued March 22, and warnings were sent out from day to day thereafter until the flood subsided. The river rose steadily during the last few days of March, reaching flood stages at Grand Rapids on April 2 and the highest point, 15.8, on April 7.

In the meantime, one ice gorge after another formed both above and below the city of Portland and caused the citizens of that place much discomfort and anxiety, but the Portland ice gorges were the only serious ones which occurred throughout the entire river stand. The river fell below flood stage at Eaton Rapids on April 2; at Lansing, April 9; at Grand Ledge, April 10; Iona, April 9; Lowell, April 11; and at Grand Rapids, April 13. At the close of the month, the river stages at all places were above normal.

The flood in the Saginaw River is interesting in that it was caused entirely by the run-off of the winter's accumulation of snow.

On March 12, after making a careful survey of the snow on the ground and owing to the lateness of the season, a statement was issued from the Grand Rapids office of the Weather Bureau to the citizens of the Saginaw Valley, saying that there was more than a probability that high water would prevail during the last of March or the early part of April; if there was no heavy rain, the water would rise only to a moderate height above flood stages, but that with rain more severe conditions might be expected. During the flood there was some ice jamming, but aside from alarming the people and causing slight temporary rises, no appreciable effect was traceable to jams.

The warm weather which set in during the last decade of March caused rapid rises in most of the tributaries of the Saginaw River and the waters then congested in that short stream.

Flood warnings were issued to all places in the lower part of the Saginaw watershed on March 22 and flood stages were reached at Midland and Saginaw by the close of the month.

The greatest damage was done at Midland and Saginaw. At Midland the river rose 4.5 feet above flood stage on April 1 and then fell slowly until the evening of the 4th, when two days of very warm weather occurred that searched out all of the remaining snow in the woods and gullies, again raising the river until the evening of April 6, when it was 5.5 feet above flood stage. At this time, a large section of the city of Midland was under water and many of the residents in one part of the town were driven from their homes.

TABLE 1.—Climatological data for April, 1912. District No. 4, Lake Region.

Stations:	Counties.	Elevation, feet.	Length of record, years.	Temperature, in degrees Fahrenheit.						Precipitation, in inches.						Sky.	Prevailing wind direction.	Observers.			
				Mean.	Departure from the normal.	Highest.			Lowest.			Greatest daily range.	Total.	Departure from the normal.	Greatest in 24 hours.			Number of rainy days 0.01 inch or more.	Number of clear days.	Number of partly cloudy days.	Number of cloudy days.
						Date.	Lowest.	Date.	Greatest daily range.	Total.	Greatest in 24 hours.				Total.	Greatest in 24 hours.	Total.				
Minnesota.																					
Cloquet.....	Carlton.....	800	1	40.5	.....	76	5	15	1	42	2.29	0.77	1.44	3.0	7	7	16	7	e.	Walter McDonald.
Duluth.....	St. Louis.....	1,123	41	38.7	+ 0.3	74	5	21	1	34	2.58	+ 0.44	1.44	6.4	7	11	11	8	ne.	U. S. Weather Bureau.	
Floodwood.....	do.....	1,257	6	.....	.....	77	5	16	1	56	1.50	.....	1.20	T.	3	19	7	4	n.	M. H. Schussler.
Stephens Mine.....	do.....	1,500	5	41.0	.....	70	5	17	1	37	1.46	- 0.70	0.85	2.0	7	16	8	6	ne.	Oliver Iron Mining Co.
Two Harbors.....	Lake.....	614	18	39.6	+ 0.6	70	5	15	1	47	1.53	- 0.32	1.20	T.	4	15	6	9	ne.	G. W. Watts.	
Virginia.....	St. Louis.....	1,434	18	41.6	+ 2.0	77	5	16	1	47	1.53	- 0.32	1.20	T.	4	15	6	9	ne.	Oliver Iron Mining Co.	
Wisconsin.																					
Appleton.....	Outagamie.....	795	11	45.8	+ 2.8	70	4†	24	3	36	2.13	- 0.37	1.16	T.	9	17	7	6	e.	Wm. O. Thiede.	
Ashland.....	Ashland.....	647	21	40.0	+ 0.4	78	5	16	8	36	2.04	+ 0.53	0.65	T.	7	11	10	9	ne.	Sam Wheeler.	
Bayfield.....	Bayfield.....	635	3	40.0	.....	67	4	12	7	45	2.46	.....	1.02	3.5	7	13*	3*	13*	nw.	Fred Kern.
Cecil.....	Shawano.....	804	14	44.9	+ 2.1	72	4	22	1	35	1.61	- 1.16	0.70	0	6	16	11	3	sw.	Louis W. Schmidt.	
Crandon.....	Forest.....	1,060	17	41.6	+ 0.6	69	5	18	1	36	1.70	- 0.39	0.85	0	6	15	13	12	nw.	Frank Shoemaker.	
Florence.....	Florence.....	1,293	21	40.5	+ 1.6	72	5	16	1	39	2.62	+ 0.18	1.20	0	9	17	2	11	n.	Fred S. Evans.	
Fond du Lac.....	Fond du Lac.....	800	28	47.6	+ 3.1	73	14	22	19	41	0.94	- 1.30	0.32	T.	7	23	5	2	ne.	Edward A. Seeley.	
Grand River Locks.....	Marquette.....	770	16	48.2	.....	74	5†	22	18	41	1.33	- 1.27	0.55	T.	8	19	3	8	sw.	Jerry Parkinson.
Green Bay.....	Brown.....	617	26	43.5	+ 2.8	67	6	23	3	31	2.06	- 0.38	0.76	T.	10	6	12	12	ne.	U. S. Weather Bureau.	
High Falls.....	Marinette.....	810	0	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	No. Hydro-Elec. Power Co	
Iron River.....	Bayfield.....	1,096	3	42.6	.....	80	5	17	18†	55	1.86	.....	0.65	4.0	9	20	2	8	s.	Winfield E. Tripp.
Kewaunee.....	Kewaunee.....	590	3	41.5	.....	68	4	20	2	35	1.83	.....	0.59	0	6	11	9	5	sw.	Eugene V. Kimball.
Manitowoc.....	Manitowoc.....	616	61	43.6	+ 1.4	69	4†	24	3	35	0.98	1.51	0.45	T.	6	5	14	11	s.	Johanna Lups.
Menasha.....	Winnebago.....	764	15	.....	.....	.....	.....	.....	.....	.....	1.74	.....	0.76	0	5	22	3	5	sw.	Geo. T. Allanson.
Menominee Falls.....	Waukesha.....	842	3	45.6	.....	70	14	23	19	37	1.69	.....	0.64	2.8	9	16	10	4	sw.	Arthur H. Christman.
Milwaukee.....	Milwaukee.....	681	41	45.8	+ 4.0	73	14	29	18	34	1.72	- 0.98	0.68	6.6	11	11	12	7	sw.	U. S. Weather Bureau.	
New London.....	Outagamie.....	762	16	46.0	+ 1.7	72	4†	23	3	37	1.35	- 1.45	0.40	0	6	8	11	11	ne.	August H. Pape.	
Oconto.....	Oconto.....	590	21	43.0*	- 0.1	70*	5	21*	3	36*	1.40	- 1.19	0.41	0	5	12*	13*	4*	ne.	Wm. K. Smith.	
Oshkosh.....	Winnebago.....	744	23	46.2	+ 1.3	73	5	21	3	40	0.61	- 2.00	0.30	0	5	19	11	0	sw.	Evan Vincent.	
Pine River.....	Waushara.....	900	17	47.4	+ 2.9	73*	5	25	19†	39*	0.96	- 1.59	0.45	0	6	11*	7*	9*	sw.	Geo. H. Carpenter.	
Plum Island.....	Door.....	588	4	39.8	.....	62	26	16	1	33	1.74	.....	0.44	0	9	13	12	5	sw.	Geo. C. Robinson.
Plymouth.....	Sheboygan.....	843	2	45.0	.....	69	6	23	3	35	0.83	.....	0.30	1.0	7	13	10	7	sw.	Paul O. Feldrappe.
Port Washington.....	Ozaukee.....	713	19	44.6	+ 1.5	71	5†	26	2	35	1.59	- 1.39	0.40	4.0	7	12	10	8	ne.	Richard C. Kann.	
Racine.....	Racine.....	633	15	46.6	+ 1.9	74	14	23	19	39	2.18	- 0.32	0.72	6.2	8	13	8	9	sw.	Daniel Davis.	
Ripon.....	Fond du Lac.....	935	26	46.6	.....	72	14	25	3	39	0.98	.....	0.50	0	6	15	6	9	sw.	Ripon College.
Sheboygan.....	Sheboygan.....	831	13	44.5	+ 1.8	76	4	25	3	41	1.08	- 1.27	0.42	1.0	7	11	13	6	se.	Louis C. Meyer.	
Sturgeon Bay.....	Door.....	600	13	41.2	+ 1.8	67	4†	15	3	35	2.31	.....	1.07	0	7	10	17	3	ne.	Adam N. Dier.
Superior.....	Douglas.....	671	3	37.8	.....	76	5	20	1	44	2.34	.....	1.09	4.1	8	14	7	ne.	Edward B. Banks.	
Waupaca.....	Waupaca.....	857	17	45.6	+ 1.5	76 ^b	5	18	3	46 ^b	1.76	- 0.90	0.72	0	8	10	8	12	sw.	James H. Flagg.	
Illinois.																					
Chicago.....	Cook.....	824	42	48.8	+ 2.9	75	14	31	2	44	2.55	- 0.33	1.05	0.1	9	14	7	9	sw.	U. S. Weather Bureau.	
Evanston.....	do.....	601	..	49.8	.....	77	14	27	3	36	3.14	.....	0.66	T.	10	15	1	14	.....	City of Evanston.
Indiana.																					
Auburn.....	Dekalb.....	874	16	48.0	+ 1.5	79*	12	23	3	40	2.14	- 0.39	0.55	T.	9	12	0	18	w.	Mrs. Josie B. Kuhlman.	
Berne.....	Adams.....	849	3	51.1	.....	80	12	23	3	35	4.15	.....	0.90	5.0	14	15	7	8	sw.	Henry M. Reusser.
Elkhart.....	Elkhart.....	801	10	52.5	.....	75	12†	25	3	39	3.71	.....	1.42	0	9	18	2	10	sw.	Dr. Miles Medical Co.
Fort Wayne.....	Allen.....	856	16	49.6	+ 0.3	78	12	25	3	33	2.44	- 0.50	0.49	T.	12	13	8	9	sw.	U. S. Weather Bureau.	
Hammond.....	Lake.....	598	21	50.1	+ 2.6	77	14	24	3	40	3.84	.....	0.90	0	8	8	11	11	.....	Carson W. Whitney.
Notre Dame.....	Lagrange.....	886	7	49.9	.....	81	12	24	3	40	3.84	.....	1.78	0	7	19	0	11	.....	James E. Zook.
Whiting.....	St. Joseph.....	712	1	48.3	.....	74	14	24	3	30	2.68	.....	0.96	T.	12	12	10	8	sw.	U. S. Weather Bureau.
Michigan, Upper Peninsula.																					
Baraga.....	Baraga.....	623	10	.....	.....	73	6	- 1	1	43	1.64	.....	0.43	.....	7	14	8	8	w.	Duluth, S. S. & Atl. Ry. Frank McMonigal.
Bergland.....	Ontonagon.....	1,300	2	39.8	.....	73	6	- 1	1	43	1.64	.....	0.43	.....	7	14	8	8	w.	E. S. Grierson.
Blaney.....	Schoolcraft.....	4	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	sw.	U. P. Experiment Station. Mrs. Sarah E. McGraw.
Calumet.....	Houghton.....	1,246	24	36.2	- 1.1	64	5	15	1	39	3.15	+ 1.00	0.55	8.0	11	17	5	8	e.	Linton Melvin.	
Chatham.....	Alger.....	875	11	35.4	- 0.7	62	5	4	1†	38	2.40	+ 0.42	0.48	2.9	14	12	9	9	sw.	John Nolen.	
Deer Park.....	Luce.....	610	11	36.1	+ 0.6	61	20†	5	1	40	1.30	- 0.21	0.70	T.	3	16	3	11	sw.	U. S. Weather Bureau.	
Detour.....	Chippewa.....	585	11	36.2	- 1.6	65	13	5†	2	32	1.51	.....	0.70	0	15*	4†	5†	5	nw.	W. B. Hatfield.
Eagle Harbor.....	Keweenaw.....	622	13	36.4	- 1.0	64	6	11	8	30	1.79	- 0.36	0.45	0.8	7	11	7	12	e.	Mrs. Lena Truedell.	
Escanaba.....	Delta.....	612	39	37.2	0	59	26	14	1	23	1.91	- 0.16	0.85	T.	9	7	14	9	s.	T. A. Green.	
Ewen.....	Ontonagon.....	1,147	11	40.9	+ 1.7	72	5	12	1	41	1.26	- 0.50	0.62	8.5	7	13	0	17	sw.	U. S. Weather Bureau.	
Grand Marais.....	Alger.....	610	11	37.5	+ 1.1	58 ^b	25	18	8	29	2.12	+ 0.13	0.70	T.	12	17 ^b	4 ^b	7 ^b	n.	Chaplin Mining Co.	
Green.....	Ontonagon.....	622	1	37.8	0	72	5	12	13	31	0.19	.....	0.19	0	1	17	5	8	sw.	Victor D. Laing.
Houghton.....	Houghton.....	688	11	36.8	0	67	5	17	1	34	2.49	+ 0.46	0.70	8.5	10	13	5	12	e.		

TABLE 1.—Climatological data for April, 1912. District No. 4—Continued.

Stations.	Counties.	Elevation, feet.	Length of record, years.	Temperature, in degrees Fahrenheit.						Precipitation, in inches.						Sky.	Prevailing wind direction.	Observers.	
				Mean.	Departure from the normal.	Highest.	Date.	Lowest.	Date.	Greatest daily range.	Total.	Departure from the normal.	Greatest in 24 hours.	Total snowfall, unmelted.	Number of rainy days, 0.01 inch or more.	Number of partly cloudy days.	Number of clear days.		
<i>Michigan, Lower Peninsula—Continued.</i>																			
Alma.	Gratiot.	750	25	45.4	+ 1.1	75	6	19	3	35	1.93	- 0.46	0.48	0.1	9	8	10	12	nw.
Alpena.	Alpena.	609	39	39.4	+ 1.4	69	15	15	3	32	2.29	+ 0.09	1.04	2.3	11	5	18	7	nw.
Ann Arbor.	Washtenaw.	930	32	46.7	+ 1.3	74	15	22	3	37	3.96	+ 1.58	1.00	0	10	14	4	12	w.
Arbela.	Tuscola.	728	16	45.4	+ 0.8	73	26	20	3	37	3.04	+ 0.33	0.76	T.	9	1	11	18	ne.
Battle Creek.	Calhoun.	822	28	49.0	+ 1.5	73	6	23	3	39	3.01	+ 0.85	0.66	T.	7	15	4	11	sw.
Bay City.	Bay.	593	16	44.0	+ 0.4	74	5	19	3	39	1.30	- 1.42	1.00	0	3	...	...	...	ne.
Benzonia.	Benzie.	832	15	42.2	+ 0.2	68	25	12	3	34	1.13	- 1.80	0.35	2.0	7	6	23	1	sw.
Berlin.	St. Clair.	23	44.5	4.5	...	72	15	19*	3	36*	2.85	+ 0.51	1.08	0.3	10	3*	16*	10	nw.
Big Rapids.	Macosta.	906	16	45.0	+ 1.4	69	6†	17	3	39	2.92	- 0.16	0.77	T.	9	11	13	6	s.
Bloomindale.	Van Buren.	1,248	3	42.2	...	68	15	15	3	32	1.31	...	0.40	4.5	6	12	13	5	n.
Cadillac.	Wexford.	903	11	46.8	+ 1.5	74	11	26	3†	34	...	...	...	0	0	12	0	12	sw.
Cassopolis.	Cass.	610	34	42.4	4.5	1.7	65*	3	1	34*	1.14	- 0.58	0.86	2.0	3	11	15	4	nw.
Charlevoix.	Charlevoix.	846	8	46.0	...	72	6	21	3	37	1.64	...	0.88	0	7	21	1	8	sw.
Charlotte.	Cheboygan.	611	22	39.6	- 0.6	70	25	9	1	38	0.85	- 1.20	0.50	2.0	3	11	7	7	sw.
Clinton.	Lenawee.	830	22	48.6	+ 2.0	76	15	28	3†	42	2.91	+ 0.46	0.80	0.5	8	15	9	6	sw.
Coldwater.	Branch.	984	15	49.5	+ 3.0	75	26	23†	3	37†	2.76	+ 0.05	0.92	T.	10	16	2	12	nw.
Concord.	Jackson.	7	47.6	...	75	11	22	3	32	1.79	- 1.11	0.65	0	6	13	11	6	sw.	
Croton.	Newaygo.	685	4	45.4	...	68	15†	15	3	36	3.05	...	1.30	2.0	5	9	17	4	nw.
Detroit.	Wayne.	730	41	46.2	+ 0.7	75	15	26	3	33	2.17	- 0.16	0.69	T.	11	11	9	10	nw.
Durand.	Shiawassee.	799	4	43.4	...	70	27†	18	7	33	...	...	...	6	9	15	...	...
East Tawas.	Iosco.	590	15	40.0	- 1.3	64	15	17	1†	29	1.24	- 1.05	0.55	6	13	12	5	w.	
Eloise.	Wayne.	640	15	47.7	+ 1.4	73	6†	24	3	38	3.22	+ 1.13	1.05	T.	11	15	6	9	w.
Flint.	Genesee.	730	23	44.6	+ 0.2	73	6†	21	3	38	2.68	+ 0.44	0.90	0	9	10	7	13	w.
Frankfort.	Benzie.	589	8	40.7	...	60	22†	20	1	30	1.30	...	0.60	...	5	15	0	15	n.
Ganges.	Allegan.	665	3	46.1	...	72	6	23	3	38	3.29	+ 1.05	1.20	2.0	9	23	2	5	sw.
Gaylord.	Otsego.	1,367	12	38.7	- 1.6	65	6†	2	1	48	1.81	+ 0.63	0.73	1.0	6	5	20	sw.	
Gladwin.	Gladwin.	794	16	44.4	0	73	6	15	3	44	2.35	+ 0.34	1.50	2.0	3	23	4	3	nw.
Grand Haven.	Ottawa.	628	31	43.8	- 0.2	68	14	23	3	33	2.90	+ 0.46	1.34	1.6	13	15	7	8	w.
Grand Rapids.	Kent.	707	23	46.8	+ 0.6	74	6	23	3	32	2.46	+ 0.01	0.97	3.0	10	11	5	14	w.
Grape.	Monroe.	625	22	47.9	+ 0.9	77*	15	25	3	36*	2.33	- 0.14	0.77	T.	12	13	7	10	sw.
Grass Lake.	Jackson.	988	6	46.2	...	86	7	23	3	57	1.64	...	0.65	T.	8	18	7	11	sw.
Grayling.	Crawford.	1,147	22	41.8	+ 0.2	69	6	10	2	40	1.35	- 0.75	0.28	2.0	10	15	7	8	w.
Harbor Beach.	Huron.	635	24	42.8	+ 1.8	74	15	22	3	35	1.30	- 0.65	0.90	2.0	4	16	8	6	n.
Harrison.	Clare.	1,159	19	44.8	+ 2.3	70	6†	14	3	36	1.36	- 1.06	0.30	3.0	6	12	6	12	nw.
Harrisville.	Alcona.	616	28	39.3	+ 0.2	69	15†	15	1	34	2.07	- 0.70	0.73	2.1	12	8	9	13	nw.
Hart.	Oceana.	698	20	43.4	0	71	26	14	7	51	1.70	- 0.49	0.73	2.0	7	9	14	7	sw.
Hayes.	Huron.	620	22	43.4	0	71	26	14	7	51	1.70	- 0.49	0.73	2.0	7	9	14	7	sw.
Highland.	Oakland.	830	20	47.6	+ 2.2	73	6†	22	3	34	2.63	+ 0.13	0.87	T.	9	15	2	13	s.
Hillsdale.	Hillsdale.	1,150	15	47.6	+ 2.2	73	71	21	3	35	2.83	...	0.64	1.0	13	10	14	6	sw.
Holland.	Ottawa.	610	6	45.6	...	76	5	21	3	32	2.46	...	0.64	1.0	13	10	14	6	sw.
Howell.	Livingston.	924	20	47.6	+ 2.6	73	15	21	3	41	3.33	+ 1.05	1.00	T.	10	8	14	8	nw.
Ivan.	Kalkaska.	23	42.2	+ 0.7	68	6†	8	1	41	1.67	- 0.54	0.62	3.0	9	6	20	4	2	sw.
Jackson.	Jackson.	927	15	48.6	+ 1.9	74	6†	21	3	38	2.76	+ 0.41	1.06	T.	9	14	6	10	w.
Jeddo.	St. Clair.	667	23	43.4	+ 0.4	72	15	19	3	33	3.37	+ 1.72	1.61	T.	9	11	9	11	nw.
Kalamazoo.	Kalamazoo.	955	36	47.1	+ 0.3	74	6	20	3	36	3.25	+ 0.59	1.45	5	14	9	7	w.	
Lansing (Agric. Col.).	Ingham.	820	45	45.6	0	72	6	22	3	32	3.12	+ 0.58	1.03	0	13	11	7	12	sw.
Lansing (Capitol).	Arenac.	881	25	46.4	- 0.6	76	5	21	3	40	3.00	+ 0.54	1.04	T.	13	12	4	14	sw.
Lapeer.	Lapeer.	827	13	46.8	+ 2.7	72	6	20	3	47	2.53	+ 0.57	0.85	T.	7	4	20	6	sw.
Ludington.	Mason.	586	14	42.8	+ 1.6	65	25	20	3	39	0.68	- 1.75	0.32	2.0	4	20	6	sw.	
Luther.	Lake.	1,028	2	44.4	...	69	11	12	3	37	1.41	...	0.54	4.0	9	11	6	sw.	
Mackinaw.	Cheboygan.	592	21	39.0	+ 0.9	64	6	22	7	34	0.84	- 1.45	0.22	2.0	2	22	6	8	sw.
Mancelona.	Antrim.	1,121	16	41.4	+ 0.1	67	6	8	1	41	0.20	- 1.58	0.20	2.0	1	21	7	2	s.
Manistee.	Manistee.	600	15	44.1	+ 1.5	69	27	12	3	36	1.24	- 1.24	0.42	3.0	4	11	10	9	nw.
Marshall.	Calhoun.	896	0	47.8	...	81*	11	14*	3	57*	...	...	...	14*	0	11*	12	...	...
Midland.	Midland.	604	13	46.4	+ 1.8	79	27	20†	3	40*	3.61	...	0.45	0	10	15	3	12	sw.
Morenci.	Lenawee.	811	5	48.6	...	77	15	26	3	36	1.97	...	0.45	0	10	15	3	12	sw.
Mount Clemens.	Macomb.	615	12	46.6	+ 1.6	77	15	23	3	42	2.86	+ 1.17	0.80	T.	8	10	7	13	ne.
Mount Pleasant.	Isabella.	826	13	48.6	+ 3.2	76	5	15	1	46	1.03	- 1.14	0.43	1.2	4	19	3	8	w.
Muskegon.	Muskegon.	587	16	46.1	+ 2.1	68	14	20	3	33	0.78	- 1.44	0.30	7.8	7	22	1	7	sw.
Old Mission.	Grand Traverse.	858	18	40.8	- 1.0	67	25	9	1	32	1.49	- 0.79	0.53	2.0	7	18	5	n.	
Olivet.	Huron.	934	22	45.9	+ 0.5	71	6	19	3	33	2.89	+ 0.02	1.37	0.3	11	11	6	13	s.
Omer.	Arenac.	616	13	41.7	- 0.1	75	6	11	3	55	...	...	...	17	3	10	12	...	...
Oneway.	Presque Isle.	826	9	38.5	...	68	16†	10	1†	47	...	...	...	18	0	12	12	...	...
Owosso.	Shiawassee.	731	15	49.0	+ 3.8	76	7	21	3	46	2.93	+ 0.23	0.78	11	4	21	5	n.	
Petoskey.	Emmett.	660	22	40.8	+ 0.8	70	6†	8	1	37	1.52	- 0.09	0.90	T.	7	6	13	11	nw.
Plymouth.	Wayne.	725	15	46.0	+ 0.3	75	15	18	3	36	2.98	+ 0.53	0.88	T.	6	18	0	12	n.
Pontiac.	Oakland.	935	12	45.8	- 1.1	74	15	20	3	38	2.21	- 0.71	1.14	T.	8	14	6	10	n.
Port Austin.	Huron.	618	15	43.5	+ 2.4	71	15	19	3	42	1.17	- 0.27	0.35	1.0	7	15	7	8	n.
Port Huron.	St. Clair.	630	37	43.8	+ 1.6	72	15	21	3	33	3.10	+ 1.03	0.98	0.2	11	9	12	9	n.
Reed City.	Osceola.	1,033	15	43.6	+ 0.														

TABLE 1.—Climatological data for April, 1912. District No. 4—Continued.

Stations.	Counties.	Elevation, feet.	Length of record, years.	Temperature, in degrees Fahrenheit.						Precipitation, in inches.						Sky.	Prevailing wind direction.	Observers.			
				Mean.	Departure from the normal.	Highest.	Date.	Lowest.	Date.	Greatest daily range.	Total.	Departure from the normal.	Greatest in 24 hours.	Total snowfall, unadjusted.	Number of rainy days, 0.01 inch or more.	Number of clear days.	Number of partly cloudy days.	Number of cloudy days.			
Ohio—Continued.																					
Cleveland (1).	Cuyahoga.	762	41	48.0	+ 2.0	77	15	22	3	34	3.68	+ 1.37	1.02	6.7	14	6	12	w.	U. S. Weather Bureau.		
Cleveland (2).	do.	754	15	49.4	+ 3.3	76	15	24	3	31	5.00	+ 2.70	1.49	6.0	11	15	2	13	sw.	Rev. F. L. Odenbach, S. J.	
Conneaut.	Ashtabula.	675	2	46.4*	+ 1.6	79	15	24b	3	37	4.38	.....	1.00	4.5	11	13	6	11	sw.	E. L. Ransom.
Findlay.	Hancock.	776	23	50.8	+ 1.6	81	18	21	3	40	3.94	+ 1.07	0.79	4.0	13	20	3	7	sw.	Dr. E. A. Moser.	
Fremont.	Sandusky.	628	10	49.8	+ 1.3	79	15	22	3	36	2.98	- 0.53	0.72	2.0	6	14	6	10	sw.	E. Stanley Thomas.	
Hedges.	Paulding.	725	18	52.1	+ 3.2	81	12	26	3	39	3.07	+ 0.12	1.13	0	8	14	6	10	sw.	Charles Stutzman.	
Hillhouse.	Lake.	997	19	47.1	+ 2.3	77	15	21	3	37	4.00	+ 1.13	1.18	6.0	10	13	11	6	sw.	J. W. Doncaster.	
Hiram.	Portage.	1,260	32	48.9	+ 2.4	76	15	23	3	36	3.48	+ 0.45	1.37	4.0	11	12	11	7	nw.	Prof. G. H. Colton.	
Hudson.	Summit.	1,153	51	49.8	+ 3.3	78	15	16	3	38	6.98	+ 4.28	1.60	6.0	17	15	4	11	sw.	Dr. W. I. Chamberlain.	
Lima.	Allen.	875	13	51.2	+ 2.8	78	15	19	3	36	3.46	- 0.04	0.97	5.0	9	17	7	6	w.	Miss Ollie DeLong.	
Medina.	Medina.	944	24	50.4	+ 2.9	79	12	25	3	41	5.36	+ 2.22	1.70	4.0	8	17	8	11	s.	F. W. Clark.	
Montpelier.	Williams.	880	20	49.7	+ 2.0	76	12†	25	3	38	2.11	- 0.96	0.74	0	9	14	6	10	w.	G. L. Laser.	
Napoleon.	Henry.	680	25	50.2	+ 1.7	78	15	27	3	34	2.25	- 0.42	0.75	0	12	16	2	12	nw.	A. C. Senter.	
New Bremen.	Auglaize.	1,038	19	52.2	+ 2.4	80	12	17	3	35	2.90	+ 0.34	0.95	3.5	7	5	14	11	sw.	Miss Lillian Grothaus.	
North Royalton.	Cuyahoga.	1,000	19	48.2	+ 1.2	78	5	27	3†	36	5.95	+ 3.21	1.35	6.0	9	13	8	9	nw.	W. S. Edgerton.	
Norwalk.	Huron.	719	26	49.4	+ 2.1	78	15	20	3	40	4.37	+ 1.91	0.73	6.0	10	6	13	11	w.	Giles R. Gregory.	
Oberlin.	Lorain.	855	37	49.5	+ 2.2	78	15	22	3	40	4.79	+ 2.09	1.32	8.0	14	10	4	16	s.	Prof. F. F. Jewett.	
Ottawa.	Putnam.	720	19	51.2	+ 1.6	80	12	25	3	38	2.92	- 0.11	0.65	0	10	12	6	12	sw.	Prof. J. T. Maidlow.	
Sandusky.	Erle.	629	35	47.6	+ 0.3	78	15	22	3	37	2.43	- 0.12	0.66	2.4	13	11	7	12	sw.	U. S. Weather Bureau.	
Tiffin.	Seneca.	775	30	50.3	+ 1.5	75	14	25	1†	32	5.03	+ 2.17	1.21	7.0	12	8	14	8	sw.	Proj. T. H. Sonnedecker.	
Toledo.	Lucas.	769	41	48.4	+ 1.1	75	15	26	3	34	2.72	+ 0.44	0.75	T.	13	13	7	10	sw.	U. S. Weather Bureau.	
Upper Sandusky.	Wyandot.	854	29	51.0	+ 1.1	78	12†	21	3	33	3.90	+ 1.00	1.05	4.0	10	12	10	8	sw.	Robert E. Tracht.	
Vickery.	Sandusky.	588	19	49.1	+ 1.4	77	15	20	3	37	3.48	+ 0.92	0.76	2.0	11	9	10	9	s.	John W. Barr.	
Wauseon.	Fulton.	780	40	47.1	0.0	78	15	26	3	38	1.82	- 1.24	0.50	T.	12	7	12	11	w.	Thomas Milesell.	
Willoughby.	Lake.	649	18	40	47.1	0.0	78	15	26	3	38	1.82	- 1.24	0.50	T.	12	7	11	w.	C. M. Richardson.	
Pennsylvania.																					
Erie.	Erie.	658	39	45.5	+ 0.8	78	15	26	3	38	4.22	+ 1.82	0.99	6.1	13	7	13	10	w.	U. S. Weather Bureau.	
New York.																					
Adams Center.	Jefferson.	540	21	41.8	+ 1.7	74	15	8	4	36	2.99	+ 0.34	0.50	13.5	13	11	2	6	w.	A. E. Cooley.	
Angelica.	Allegany.	1,340	29	43.6	+ 0.3	72	15	13	4	42	4.48	+ 1.56	1.36	10.5	13	2	6	22	w.	Charles P. Arnold.	
Appleton.	Niagara.	270	21	43.2	+ 0.7	80	15	23	3	38	3.00	+ 0.73	0.55	6.2	13	10	9	11	ne.	H. A. Van Wagoner.	
Auburn.	Cayuga.	715	43	44.4	- 0.6	76	6	16	4	38	4.68	+ 2.16	0.80	10.0	14	13	11	6	n.	A. H. Underwood.	
Avon.	Livingston.	585	17	44.5	0.0	77	15	18	4	39	1.61	- 0.48	0.43	3.8	8	5	12	13	sw.	W. G. Markham.	
Blue Mountain Lake.	Hamilton.	1,750	12	45.5	- 0.1	79	15	20	3†	36	3.04	+ 0.19	0.44	6.5	18	7	17	6	s.	B. F. Merwin.	
Brockport.	Monroe.	537	16	43.5	- 1.1	79	15	20	3†	36	3.04	+ 0.19	0.44	6.5	18	7	17	6	w.	W. H. Lennon.	
Buffalo.	Erie.	767	61	42.2	- 0.3	73	15	20	3	37	3.39	+ 0.94	0.88	4.5	16	4	12	14	w.	U. S. Weather Bureau.	
Canton.	St. Lawrence.	448	18	40.6	- 1.9	69	15	16	4	44	2.46	+ 0.20	0.48	3.8	14	10	12	8	s.	Do.	
Cape Vincent.	Jefferson.	248	7	40.0	0.0	73	15	18	4	38	3.27	.....	0.91	.....	12	14	7	9	s.	J. Harry Grapotte.
Carvers Falls.	Washington.	243	14	40.0	0.0	77	15	15	10	49	2.34	- 0.39	0.58	13.5	12	17	5	8	nw.	Washburne Rancher, C. E.	
Castile.	Wyoming.	0	12	41.6	- 0.9	73	16	17	1	39	1.58	0.00	0.48	4.0	6	14	9	7	n.	Miss Caroline Bishop.	
Chazy.	Clinton.	151	12	41.6	- 0.9	73	16	17	1	39	1.58	0.00	0.48	4.0	6	14	9	7	n.	W. R. North.	
Dannemora.	Elba.	1,490	7	40.9	- 0.6	69	6†	12	1	39	2.29	.....	0.56	12.0	13	15	5	12	w.	Dr. W. N. Thayer.
Elba.	Genesee.	500	13	42.6	0.0	78	15	15	4	42	2.89	- 0.25	0.60	12.0	10	10	11	9	nw.	Joseph S. Willford.	
Faust.	Franklin.	1,550	1	44.6	- 0.7	78	6	13	4	39	4.19	+ 1.44	0.72	8.5	18	19	6	11	nw.	Santa Clara Lumber Co.	
Fayetteville.	Onondaga.	530	11	44.6	- 0.7	78	6	13	4	39	4.19	+ 1.44	0.72	8.5	18	19	6	11	nw.	Dane H. Wells.	
Gabriels.	Franklin.	1,729	10	38.1	0.0	69	7	4	4	40	3.30	.....	0.35	14.0	14	15	7	8	w.	Gabriels Sanitarium.
Harkness.	Clinton.	622	10	41.8	+ 0.2	71	16	13	3	44	2.25	+ 0.57	0.60	12.0	13	22	4	4	w.	J. W. Harkness.	
Hunt.	Livingston.	1,321	13	45.6	+ 1.1	80	15	18	4	44	3.64	+ 0.68	1.24	6.0	7	4	10	16	nw.	W. S. Barager.	
Ithaca.	Tompkins.	928	34	44.5	+ 0.3	76	6	20	3	37	2.97	+ 0.68	0.94	10.5	16	9	10	11	nw.	U. S. Weather Bureau.	
Keene Valley.	Essex.	1,000	14	42.2	+ 0.8	77	6†	15	10	49	2.34	- 0.39	0.58	13.5	12	17	5	8	nw.	E. R. Wells.	
Kings Ferry.	Cayuga.	12	40	44.6	+ 0.7	72	6†	16	4	41	2.48	+ 0.17	0.58	8.3	11	9	6	15	se.	Lucius A. Goodyear.	
Lake George.	Warren.	350	15	44.4	+ 0.7	72	6†	16	4	41	3.48	+ 0.75	0.64	9.1	15	9	14	7	s.	Charles Forsell.	
Lake Placid Club.	Essex.	1,864	33	43.9	- 0.6	68	6†	6	4	46	3.33	.....	0.51	22.7	16	11	11	8	nw.	Henry Van Horwenberg.
Lockport.	Niagara.	520	25	43.8	- 1.4	77	15	21	4	32	2.97	+ 0.74	0.68	1.0	14	8	11	11	sw.	Robert N. Clark.	
Lowville.	Lewis.	900	40	38.3	- 4.2	67	16	14	4	47	3.6	.....	0.52	12.0	12	8	10	8	s.	Charles J. Rice.
Moira.	Franklin.	200	12	40.9	- 1.7	69	7†	7	4	39	3.17	+ 0.69	0.52	12.5	10	7	13	10	w.	C. E. McBride.	
Nahasane.	Hamilton.	1,750	4	36.2	0.0	64	6	0	4	41	3.79	.....	0.55	20.5	16	13	11	6	nw.	L. W. Brown.
Ogdensburg.	St. Lawrence.	175	28	40.2	- 3.8	72	16	11	2	39	2.36	+ 0.27	0.90	T.	4	14	8	8	se.	Mrs. S. W. Nelson.	
Old Forge.	Herkimer.	1,733	4	41.6	- 1.6	75	15	22	3	32	2.92	+ 0.66	0.70	5.5	15	8	9	13	s		

TABLE 2.—*Daily precipitation for April, 1912. District No. 4, Lake Region.*

TABLE 2.—*Daily precipitation for April, 1912. District No. 4—Continued.*

Stations.	Watershed.	Day of month.																															
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	Total	
<i>Michigan, Lower Peninsula—Con.</i>																																	
Battle Creek.	Kalamazoo.	.48																															3.01
Bay City.	Saginaw.																															1.30	
Benzonia.	Betssey.																															1.13	
Berlin.	Clinton.	.57	.03																													2.85	
Big Rapids.	Muskegon.	.03																														2.92	
Bloomingdale.	Lake Michigan.	.18																														1.70	
Cadillac.	Manistee.																															1.31	
Cassopolis.	St. Joseph.																																
Charlevoix.	Lake Michigan.																															1.14	
Charlotte.	Kalamazoo.	.14																														1.64	
Cheboygan.	Cheboygan.																															0.85	
Clinton.	Raisin.	.30																														2.91	
Coldwater.	St. Joseph.	.30																														2.76	
Concord.	Kalamazoo.	.20																														1.79	
Croton.	Muskegon.	T.																														3.05	
Detroit.	Detroit.	.24	T.																													2.17	
Durand.	Saginaw.																																
East Tawas.	Lake Huron.	T.	T.																													1.24	
Eloise.	Rouge.	.37	T.	T.																												3.22	
Flint.	Saginaw.	.25																														2.68	
Frankfort.	Betssey.																															1.30	
Ganges.	Lake Michigan.	.38																														3.29	
Gaylord.	Cheboygan.		T.	T.																												1.81	
Gladwin.	Saginaw.																															2.35	
Grand Haven.	Grand.	.03																														2.90	
Grand Rapids.	do.	.12	T.																													2.46	
Grape.	Raisin.	.29	.01																													2.33	
Grass Lake.	Grand.	.20																														1.64	
Grayling.	Au Sable.																															1.35	
Harrison Beach.	Lake Huron.	.20																														1.30	
Harrison.	Saginaw.	.10	.01																													2.07	
Hart.	Pentwater.																															0.50	
Hayes.	Pigeon.	.20																														1.70	
Hillsdale.	Huron.																															3.07	
St. Joseph.	St. Joseph.	.32																														2.63	
Holland.	Lake Michigan.	.14																														2.83	
Howell.	Saginaw.	.30	.05																													3.33	
Ivan.	Manistee.																															1.67	
Jackson.	Grand.	.35																														2.76	
Jeddo.	St. Clair.	.20	T.																													3.87	
Kalamazoo.	Kalamazoo.	.25																														3.25	
Lansing (Agr. Col.).	Grand.	.35																														3.12	
Lansing (Capitol).	do.	.33																														3.00	
Lapeer.	Saginaw.	.20	T.																													2.53	
Ludington.	Pere Marquette.																															0.68	
Luther.	Manistee.	T.																														1.41	
Mackinaw.	Lake Huron.																															0.34	
Mancelona.	Lake Michigan.																															0.20	
Manistee.	Manistee.																															1.24	
Marshall.	Kalamazoo.																																
Midland.	Saginaw.																																
Morenci.	Maumee.	.25																														1.97	
Mount Clemens.	Clinton.	.30	T.	T.																												2.86	
Mount Pleasant.	Saginaw.																															1.03	
Muskegon.	Muskegon.	.01																														0.78	
Old Mission.	Lake Michigan.																															1.49	
Olivet.	Kalamazoo.	.28																														2.89	
Omer.	Lake Huron.																																
Onaway.	Cheboygan.	.28																														2.93	
Osoway.	Saginaw.	.38																														1.52	
Petoskey.	Lake Michigan.	.08																														2.39	
Plymouth.	Rouge.	.17	T.																													2.21	
Pontiac.	Clinton.	.20	T.																													1.17	
Port Austin.	Lake Huron.	.10																															
Port Huron.	St. Clair.	.45	.02																													0.75	
Reed City.	Muskegon.																															1.28	
Roscommon.	Au Sable.																															2.80	
Saginaw.	Saginaw.	.27																														2.72	
Saginaw West Side.	do.	.20	T.																													1.57	
St. James.	Lake Michigan.	.03																														1.57	
St. Joseph.	St. Joseph.	.20	.04																													2.84	
Sandusky.	Lake Huron.	.06																														3.23	
South Haven.	Grand.	.05																														2.57	
Stanton.	Grand.	.03																														3.20	
Thornville.	Saginaw.	.36																														2.69	
Traverse City.	Lake Michigan.	</td																															

TABLE 2.—*Daily precipitation for April, 1912. District No. 4—Continued.*

Stations.	Watershed.	Day of month.																													Total
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Ohio—Continued.																															
Medina.....	Lake Erie.....	T.	1.0076	T.3322	.9035	1.70	5.36
Montpelier.....	Maumee.....	.04400532740825	2.11
Napoleon.....	do.....	.15	.011825	.10	.1145	.0206	2.25
New Bremen.....	do.....	.9503	.0253	T.75	2.90
North Royalton.....	Lake Erie.....	.08	.60	1.3534	1.3526	1.33	5.95
Norwalk|||.....	do.....2253286057	4.37
Oberlin.....	do.....	.06	1.10	.022830	.03	.21	.762902	4.79	
Ottawa.....	Maumee.....	.652636	.20	.0265	.0428	2.92	
Sandusky.....	Lake Erie.....	.21	.3404	15	T.	T.	.0105	.01	.374824	2.43	
Tiffin.....	Sandusky.....	.13	1.21	T.	.....	.....	.....	.24	T.	T.	.....	.78	.06	.44	T.	.....	.85	T.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.11	5.03
Toledo.....	Maumee.....	.31	T.	.....	.....	.....	.....	.04	.21	T.	T.	.....	.06	.01	.20	.....	.75	.03	.....	.....	.....	.....	.....	.....	.....	.....	.02	1.02	
Upper Sandusky.....	Sandusky.....	.05	.93	T.	.....	.....	.....	.10	T.	T.	.....	.30	.15	T.	.28	.....	1.05	T.	.....	.....	.....	.....	.....	.....	.....	.....	.12	2.72	
Vickery.....	Lake Erie.....	.25	.58	.....	.....	.....	.....	.20	.....	.....	.....	.25	.03	.67	.....	.75	.01	.....	.....	.....	.....	.....	.....	.....	.....	.....	.80	3.90	
Wauseon|||.....	Maumee.....	T.	19	T.	.....	.....	.....	.21	T.	T.	.....	.02	.01	.06	.....	.50	.09	.....	.....	.....	.....	.....	.....	.....	.....	.....	.04	0.7	
Willoughby|||.....	Lake Erie.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.16	2.82	
Pennsylvania.																															
Erie.....	Lake Erie.....	.32	.49	T.	T.	T.	.6401	T.	.46	T.	.62	.2916	T.	.012201	T.20	.79	4.22
New York.																															
Adams Center.....	Lake Ontario.....	.20	.10	.....	.....	.....	.....	.44	.20	.50	.....	.10	.....	.....	.11	.....	.....	.13	.43	.....	.....	.42	.20	.....	.....	.04	.....	.12	2.99
Altmar.....	do.....3405	T.	.5026	T.	1.36	.02	
Angelica.....	Genee.....	.22	.95	.07	.023417	T.	.06321153	.03	13	4.48	
Appleton.....	Lake Ontario.....	.20	.15	T.55	T.	.1713	.06321143	.10	15	T.08	3.00
Auburn.....	Oswego.....	.32	.42	T.80	.06	.3822	T.2614	.4562	.08	.1872	4.68	
Avon.....	Genesee.....	.26	.11	.05	.....	.....	.....	.13	.....	.23	.....	.....	.....	T.	T.	.....	.33	T.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.43	1.61
Blue Mountain Lake.....	Raquette.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Boonville.....	Black.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Brockport.....	Lake Ontario.....	.30	.32	.1036	.01	.40	.02	.14	.0807	.1703	.0144	.03	.23	T.31	.02	
Buffalo.....	Lake Erie.....	.49	.31	T.	.02	.....	.....	.55	T.	.03	.....	.63	.23	.....	.04	.....	.03	.01	.....	.37	.08	.09	T.	.....	.01	.44	.....	.....	3.39
Canton.....	Grass.....	.40	.02	.06	.....	.....	.....	.47	T.	.04	.....	.06	.20	.....	.38	.10	.....	.25	.29	.16	.....	.25	.09	T.	.....	.01	.....	.....	2.46
Cape Vincent |||.....	St. Lawrence.....	.20914005	.07	.5318	.0465	.12	.05	.07	3.27	
Carvers Falls.....	L. Champlain.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Horsehoe.....	Genesee.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Ithaca.....	Champlain.....	.40	.56	.261003	.02	T.03	.19	T.40	T.01	.3809	1.58	
Keeone Valley.....	Dannemora.....	.12	.56	.261003	.02	T.03	.19	T.40	T.01	.3809	2.29	
King Ferry.....	Elba.....	.30	.3025	.602015	T.	T.	3.89	
Lake George.....	Faust.....	.24	.61	.27	.....	.....	.....	.72	.08	.21	.06	.09	.23	.....	.04	.06	.06	.06	.33	.....	.....	.28	.20	.17	T.	T.	.43	.11	4.19
Lake Placid Club.....	Gabriels.....	.20	.30	.30	.....	.....	.....	.25	.20	T.	.20	.....	.04	.....	.20	.10	.....	.35	.35	.....	.....	.20	.35	.....	.10	.....	.....	.....	3.30
Leaser Mills.....	Harness.....	.13	.60	.31	.....	.....	.....	.17	.....	.07	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2.25
Lockport.....	Horseshoe.....	.43	.60	.....	.....	.....	.....	.53	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1.24
Mohra.....	Ithaca.....	.24	.94	.15	.....	.....	.....	.22	.12	.09	T.	.02	.05	.12	T.	.11	.....	.03	.04	.06	.....	.12	T.	.07	.....	.....	.59	2.97	
Nehasane.....	Ausable.....	T.	.31	.58	.....	.....	.....	.12	.06	.42	.....	.....	.03	.....	.22	.....	.09	.04	.....	.29	.11	.....	.....	.....	.....	.....	.....	.....	2.34
North Lake.....	Oswego.....	T.	.58	.08	.....	.....	.....	.44	.....	.13	.....	.08	.07	.....	.14	.....	.34	.....	.....	.32	.02	.....	.....	.....	.....	.....	.....	.....	2.75
North Osceola.....	L. Champlain.....	.12	.52	.02	.....	.....	.....	.12	.....	.11	.....	.21	.04	.....	.07	.16	.....	.36	.63	.....	.38	.64	.....	.....	.....	.....	.....	.....	3.48
Ogdensburg.....	Leaser Mills.....	.....	.....	.....	.....	.....	.....	.90	.....	T.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2.36
Old Forge.....	Black.....	.....	.....	.....	.....	.....	.....	.68	T.	.13	.....	.11	.08	.....	.34	.24	.....	.10	T.	.....	.26	.19	.13	.....	.....	.....	.....	.....	2.97
Oswego.....	Lake Ontario.....	.30	.05	T.	T.	.....	.....	.69	.01	.24	.....	.06	.10	.10	.....	.36	.05	.....	.52	.02	.16	.....	.01	T.	.....	.25	2.92		
Otto.....	Lake Erie.....	.19	.44	.....	.....	.....	.....	.32	T.	.47	.....	.28	.....	T.	.04	T.	.64	.09	.06	.....	.....	.61	.....	.....	.....	.....	1.75	4.28	
Palermo.....	Lake Ontario.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Perry City.....	Oswego.....	.10	.84	.29	.....	.....	.....	.40	.07	.08	T.	.18	.....	.25	.....	.24	.10	.....	.08	.02	.03</								

TABLE 3.—Maximum and minimum temperatures for April, 1912. District No. 4, Lake Region.

Date.	Duluth, Minn.		Wisconsin.						Chicago, Ill.		Fort Wayne, Ind.		Upper Michigan.						Lower Michigan.										
			Florence.		Green Bay.		Milwaukee.						Escanaba.		Ewen.		Houghton.		Marquette.		Sault Ste. Marie.		Alpena.		Battle Creek.		Cadillac.		
	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	
1....	48	21	45	16	42	26	36	30	37	32	50	34	34	14	47	12	42	17	48	16	36	10	31	16	34	31	40	18	
2....	40	27	42	21	36	23	43	30	42	31	39	28	33	21	40	13	36	18	36	22	34	20	34	22	43	29	36	24	
3....	55	30	46	17	50	23	49	30	51	32	46	25	38	18	48	19	35	17	38	19	33	12	36	15	46	23	38	15	
4....	65	31	68	30	65	38	70	41	73	42	67	36	50	32	67	35	61	27	65	35	46	28	55	28	68	32	53	33	
5....	74	47	72	40	66	48	71	50	73	52	49	36	72	48	67	40	74	50	56	35	68	37	71	47	58	41			
6....	51	30	63	43	67	36	70	42	69	46	73	50	54	31	60	40	56	24	64	26	55	37	67	35	73	53	62	38	
7....	43	22	44	21	41	28	44	31	47	36	51	33	35	24	50	20	31	20	33	22	37	22	49	25	68	32	49	24	
8....	36	28	45	19	47	32	60	35	60	40	56	32	34	23	50	17	34	18	35	20	30	19	41	21	55	30	43	21	
9....	58	25	47	25	60	33	66	36	68	42	67	41	44	27	60	24	42	28	38	28	33	25	47	29	64	40	56	33	
10....	44	32	63	24	60	30	56	34	58	39	62	40	39	26	66	25	46	22	57	28	42	28	42	31	61	32	55	23	
11....	44	31	58	33	48	39	69	40	73	51	72	45	49	32	58	26	47	29	43	31	49	33	46	33	72	43	65	40	
12....	38	28	51	34	44	33	47	38	61	42	78	45	44	29	47	33	36	26	39	29	50	27	46	34	70	46	55	36	
13....	39	27	53	26	52	31	47	37	54	42	50	42	45	28	57	26	43	26	45	26	41	32	57	43	55	31			
14....	39	31	43	34	46	34	73	39	75	74	74	63	38	34	52	34	37	34	42	34	40	36	40	34	73	46	58	37	
15....	41	31	53	34	58	36	57	48	62	49	77	52	53	34	48	36	43	33	49	32	60	32	69	37	71	51	68	48	
16....	34	29	40	28	46	33	48	33	50	37	61	44	38	28	45	30	36	29	34	27	32	28	48	29	58	40	56	30	
17....	38	26	43	23	40	30	35	31	37	35	47	35	39	26	42	20	39	25	35	27	42	25	40	28	49	33	49	24	
18....	42	26	43	27	45	33	42	29	42	32	41	32	39	30	48	25	41	27	39	30	40	29	39	33	37	41	30		
19....	46	34	52	22	54	30	49	32	45	37	52	30	45	27	52	19	49	27	37	29	33	26	44	26	51	29	43	21	
20....	61	33	61	25	59	34	47	37	51	40	60	40	50	31	58	21	60	27	64	34	59	22	49	27	59	44	58	26	
21....	37	28	53	32	55	40	60	46	66	44	68	41	44	35	61	23	38	33	44	32	51	31	45	34	69	30	57	34	
22....	50	25	43	30	50	38	53	39	58	42	60	38	44	32	52	26	41	30	45	31	51	32	51	35	63	37	53	31	
23....	60	36	59	31	65	34	65	37	64	38	60	33	54	31	55	33	54	28	51	35	56	29	54	31	58	31	54	32	
24....	60	32	55	35	59	39	60	44	57	46	60	47	54	40	54	36	55	37	50	39	43	37	58	47	52	37			
25....	49	36	61	33	60	40	59	45	68	46	67	39	49	40	63	38	61	40	61	42	62	29	57	34	68	32	60	34	
Mns..	47.4	30.0	52.4	28.6	52.9	34.1	54.3	37.4	56.8	40.8	59.4	39.8	44.5	29.8	54.3	27.5	45.8	27.7	46.3	29.9	44.8	27.0	48.4	30.3	59.7	38.3	53.4	31.0	
Date.	Lower Michigan.						Ohio.						New York.						Vermont.										
	Detroit.		Muskegon.		Saginaw, West Side.		Cleveland.		Lima.		Sandusky.		Toledo.		Erie, Pa.		Buffalo.		Canton.		Rochester.		Syracuse.		Burlington.		Northfield.		
Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.
1....	35	29	34	27	34	26	53	32	57	35	37	32	38	31	42	30	40	30	27	17	39	26	42	25	30	18	33	18	
2....	36	30	37	24	35	27	32	29	45	30	32	29	37	31	31	28	32	27	29	22	34	28	31	22	39	27			
3....	39	26	37	20	40	20	35	22	40	19	39	22	45	26	32	26	30	20	29	19	31	22	30	22	31	21	31	21	
4....	59	34	58	35	61	34	59	35	63	32	61	34	63	35	56	32	49	26	40	16	46	23	42	20	35	35	20		
5....	67	46	61	37	69	49	70	54	71	50	70	52	71	50	70	55	58	40	55	40	66	46	42	39	51	31	63	21	
6....	67	48	63	50	73	51	73	54	74	51	74	52	73	52	73	58	67	42	68	45	77	53	75	55	66	47	64	34	
7....	57	29	57	30	67	30	65	31	64	28	62	32	62	31	67	29	65	28	66	22	65	29	77	27	68	30	64	32	
8....	48	29	50	33	46	26	42	31	65	29	47	31	53	31	36	27	33	24	31	21	34	23	30	23	32	19			
9....	66	38	56	40	64	37	65	40	61	39	66	40	68	41	64	35	42	29	34	23	53	28	42	26	36	22	31	18	
10....	52	36	61	45	55	30	43	33	60	41	44	34	59	36	45	32	38	30	42	20	42	31	39	28	43	24	42	18	
11....	71	38	62	38	68	45	68	38	73	42	70	42	74	44	61	36	48	30	43	28	46	33	38	32	49	33	45	31	
12....	55	40	64	43	48	38	65	40	76	51	65	38	57	40	54	35	51	37	51	29	44	35	33	50	29	49	26		
13....	51	40	60	38	56	34	57	39	74	50	61	37	42	37	44	34	51	34	45	30	45	34	36	31	41	27	50	24	
14....	69	42	68	46	64	43	76	56	70	44	75	38	73	39	65	37	61	40	58	28	64	38	46	31	47	27	44	25	
15....	75	52	64	48	71	50	77	50	78	65	78	54	78	54	73	48	69	55	55	50	70	55	61	46	52	38			
16....	60	35	51	41	56	44	52	41	69	48	57	42	64	41	55	43	54	37	63	40	64	39	67	42	7				